Research Methods

This Web site was developed by the Department of Health and Family Services in partnership with the University of Wisconsin Population Health Institute to encourage the use of evidence-based practices in the implementation of the state health plan, *Healthiest Wisconsin 2010: A Partnership Plan to Improve the Health of the Public* (HW2010). A number of individuals and bureaus contributed to this effort; thus, there may have been some variation in the exact research methodology used to identify and evaluate evidence-based interventions.

This document outlines the research methods recommended by the project's lead staff for identifying and evaluating evidence-based interventions (programs and program characteristics) to achieve the objectives of HW 2010. These methods include six main steps:

Step 1: Build the search
Step 2: Search evidence-based practice Web sites
Step 3: Search databases of peer-reviewed literature (for reviews vs. primary research)
Step 4: Organize and identify relevant references
Step 5: Review articles and abstract findings
Step 6: Review findings and summarize information

Step 1: Build the Search

The first step in building the search was to review the Implementation Plan (exit DHFS) for each objective under evaluation. This review provided clarity and insight into objectives that are only one sentence long. In addition, it provided a starting point for the identification of evidence-based practices; many of the State Health Plan workgroups had already searched for and found important resources that were helpful when examining interventions.

Additional sources of information were identified through general Web searches to find credible governmental, research, or advocacy sites that focused on the objective of interest. To minimize the impact of organizations with business interests in the field, researchers were encouraged to consider only sites that ended in .edu, .gov. or .org. Information gleaned from these sites underwent relevance and quality checks later in the research process.

When further clarification of an objective appeared necessary, members of the original workgroup or members of current workgroups were approached for assistance in identifying sources of information. These experts identified important programs or interventions currently in place in Wisconsin, as well as useful research or recommendations that could provide evidence for later examination.

Finally, resources gathered through each of these methods were reviewed to create lists of pertinent keywords that could be used to systematically search other sources of information (e.g., academic databases and evidence-based Web sites).

Step 2: Search Evidence-Based Practice Web Sites

A number of Web sites and databases in the United States and elsewhere present evidence-based research in the public health field. Using the keywords identified in Step 1 for each priority area, databases that meet the following criteria were searched systematically:

1) The methods used for reviews are at least as rigorous as those used in the outlined review process.
2) The databases include reviews relevant to more than one of Healthiest Wisconsin 2010's health or infrastructure priorities.

These databases include:

- Cochrane Database of Systematic Reviews
- Guide to Community Preventive Services
- Effective Public Health Practice Project
- Evidence-Based Health Promotion (Victoria, Australia)
- National Guideline Clearinghouse
- Health Policy Guide
- CDC Recommends

If sufficient evidence to evaluate the interventions supporting a particular objective was found using these sites and information identified in the Implementation Plan, then Step 3 could be skipped.

Step 3: Search Databases of Peer-reviewed Literature (Systematic Reviews)

A variety of electronic databases were searched for systematic reviews and meta-analyses published between 1995 and 2005. Database searches nearly always included PubMED, and often included other databases, such as CINAHL, ERIC, PsycINFO, Soc. Science Index, and Academic Search. Only articles written in English were retrieved. Reference lists from relevant articles were also searched. In addition, where applicable, a small number of journals recognized as leading sources in a particular field of study were searched for the same time period.

Last, *Partners in Information Access for the Public Health Workforce* has created a tool that includes pre-designed PubMED searches for topics related to national Healthy People 2010 (HP2010) topic areas. HP2010 objectives that are relevant to the goals of Healthiest Wisconsin 2010 were identified and their pre-designed PubMED searches were used to gather additional resources.

Step 4: Identify and Organize Relevant References

A tool was created to assess the relevance of selected articles. The inclusion criteria for studies were specified prior to assessment. For every objective, all of the following criteria were used:

- The article is a review (narrative, systematic, meta-analysis, or consensus panel).
- The population of the review mirrors the population of interest. For example, if the objective is to increase the rates of cancer screening in women, a review of interventions to increase male cancer screening should not be included.
- Interventions examined are appropriate for an audience of public health providers in Wisconsin. For example, if a review looks at policy changes that could be implemented only at the national level, these interventions are not relevant to this Web site's audience.
- Outcomes reported are appropriate. For example, if the objective is to reduce drinking rates, but the review measures the effect of various interventions on alcohol knowledge, that review should not be included.

All reviews were assessed by at least one reviewer, preferably two, with decisions regarding final recommendations made through discussion and consensus.

Refworks, a Web-based bibliography manager, was used to organize references gathered during the search process and create bibliographies for use in preparing the intervention and objective descriptions.

Step 5: Assess Quality of Review Articles and Extract Findings

Before being included in the analysis the resources used in this project were evaluated for quality using a standardized quality assessment tool based on the methodology of the *Effective Public Health Practice Project*, an initiative of the Public Health Research, Education and Development (PHRED) program of the City of Hamilton Public Health Department (Ontario, Canada). PHRED describes their tool as follows: "It is based on the guidelines set out by Sackett, et al. (1991) and others (DuRant, 1994). It has been reviewed by experts, used in other reviews and appears to have good content validity. The seven criteria for quality assessment [are]: description of the search strategy; comprehensiveness of the search; description of relevance criteria for the included primary studies; assessment of the quality of the primary studies; comprehensiveness of quality assessment of the primary studies; integration of the findings; and, adequacy of data to support the conclusions. Reviews that met six or seven of the criteria were rated as strong. Those meeting four or five were rated as moderate and the remainder were rated as weak" (Thomas, et al., 2002).

The quality assessment captured information on each article: study title, author, year, country, strength of review, number of studies reviewed, time span reviewed, outcomes measured, interventions evaluated, interveners, target populations, authors' conclusions, and comments.

Articles which received strong reviews; incorporated many studies; evaluated appropriate interventions, interveners, and target audiences; and supported their conclusions well were considered high-quality studies.

Step 6: Review Findings and Summarize Information

As each review was assessed, findings were entered onto a form that provided a standard format for recording results. These data extraction forms were gathered and the information was entered into Excel spreadsheets. The results of the reviews were then examined as a whole to make a recommendation about the intervention based on available consensus by expert reviewers and evaluators. Each intervention was then placed in one of four categories based on the strength of the research supporting them.

- **Sufficient Evidence for Effectiveness**– Research consistently supports or recommends the intervention.
- **Insufficient Evidence to Determine Effectiveness** – Research does not support a firm conclusion about the intervention's effectiveness. Interventions in this category are not ineffective programs. Rather, they have the potential to become evidence-based practices—if properly evaluated.
- **Mixed Evidence** – Research yields contradictory results.
- **Sufficient Evidence for Ineffectiveness** – Research consistently shows that the intervention is detrimental or has no effect.

Flexible criteria were necessary due to the wide-ranging nature of the objective topics and sources available. As placement in these categories required some thought and judgment, at least two reviewers examined the available evidence for each intervention, and worked towards consensus to determine the final recommendation. Although there was no clearly stated guideline requiring multiple reviews, few interventions were found to have sufficient evidence for effectiveness on the basis of a single review.